



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

10/589,807

05/15/2007

Haruhiko Komoriya

038788.58117US

2414

23911 7590 10/09/2008  
CROWELL & MORING LLP  
INTELLECTUAL PROPERTY GROUP  
P.O. BOX 14300  
WASHINGTON, DC 20044-4300

EXAMINER

EOFF, ANCA

ART UNIT

PAPER NUMBER

1795

MAIL DATE

DELIVERY MODE

10/09/2008

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/589,807	<b>Applicant(s)</b> KOMORIYA ET AL.	
	<b>Examiner</b> ANCA EOF	<b>Art Unit</b> 1795	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 15 August 2008.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 3,6,9-12,18 and 20-24 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 3,6,9-12,18 and 20-24 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)            | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. _____                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>See Continuation Sheet</u> .                                  | 6) <input type="checkbox"/> Other: _____                          |

Continuation of Attachment(s) 3). Information Disclosure Statement(s) (PTO/SB/08), Paper No(s)/Mail Date :08/17/2006, 05/15/2007, 05/13/2008.

### **DETAILED ACTION**

1. The foreign priority document JP 2004-044142, filed on February 20, 2004 was received and acknowledged. However, in order to benefit of the earlier filing date, a certified English translation is required.

### ***Election/Restrictions***

2. In response to the restriction requirement set forth in the previous Office Action, the applicant canceled claims 1-2, 4-5, 7-8, 13-17 and 19. The claims 3, 6, 9-12, 18 and 20-24, corresponding to Group III are pending.

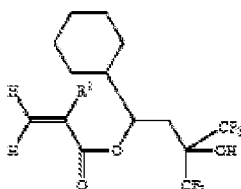
### ***Double Patenting***

3. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

4. Claims 3 and 6 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claim 12 of US Patent 7,385,091. Although the conflicting claims are not identical, they are not patentably distinct from each other because US Patent 7,385,091 claims the compound of formula:



which is equivalent to the compound of formula (3) of claim 3 of the instant application, wherein R<sub>2</sub>-R<sub>4</sub> and R<sub>6</sub>-R<sub>7</sub> are hydrogen atoms, R<sub>5</sub> is equivalent to R<sup>1</sup>, R<sub>8</sub> is a carbonyl group and R<sub>1b</sub> is a cyclohexyl group and to the compound (6) of claim 6 of the instant application, wherein R<sub>2</sub>-R<sub>4</sub> and R<sub>6</sub>-R<sub>7</sub> are hydrogen atoms, R<sub>5</sub> is equivalent to R<sup>1</sup>, R<sub>8</sub> is a carbonyl group, a=0, b=1 and c=1.

### ***Claim Rejections - 35 USC § 103***

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

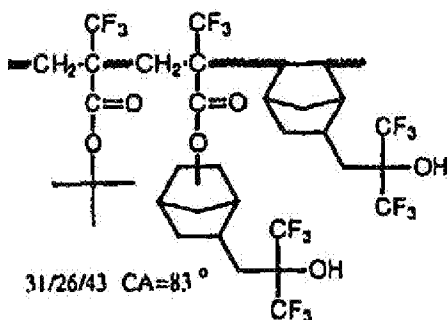
(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 3, 6, 9-12, 18 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ito et al. ("Fluoropolymer Resists: Progress and Properties", Journal of Photopolymer Science and Technology, Volume 16, Number 4 (2003), 523-536).

With regard to claim 6, based on the structure of the compounds of formula (I) and (II) of Ito et al., one of ordinary skill in the art would be motivated to obtain the compound of formula (6), wherein R<sub>5</sub> is a trifluoromethyl group, R<sub>2</sub>, R<sub>3</sub>, R<sub>4</sub>, R<sub>6</sub> and R<sub>7</sub> are hydrogen atoms, R<sub>8</sub> is a carbonyl group or a single bond, a=0, b=1, c=1 and R<sub>10</sub> and R<sub>11</sub> are bonded together to form a ring.

With regard to claim 9, based on the structure of the compounds of formula (I) and (II) of Ito et al., one of ordinary skill in the art would be motivated to obtain the compound of formula (9), wherein  $R_5$  is a trifluoromethyl group,  $R_2$ ,  $R_3$ ,  $R_4$ ,  $R_6$  and  $R_7$  are hydrogen atoms and  $R_8$  is a carbonyl group or a single bond.

With regard to claim 10, Ito et al. disclose the polymer of formula (III):



(III) (terpolymer of TBTFMA, NBHFATFMA and NBHFA in fig. 3 on page 527), which has a weight average molecular weight of 11,480 (par. 3.2 on page 527).

While Ito et al. do not explicitly show a polymer comprising an unit of formula (10) of the instant application, it would have been obvious to one of ordinary skill in the art at the time of the invention to obtain such polymer, based on the structure of the NBHFATFMA unit of the polymer (III) of Ito et al.. The structure of this unit would motivate one of ordinary skill in the art to obtain the unit of formula (10) of the instant application, wherein  $R_5$  is a trifluoromethyl group,  $R_2$ ,  $R_3$ ,  $R_4$ ,  $R_6$  and  $R_7$  are hydrogen atoms,  $R_8$  is a carbonyl group and  $R_{1b}$  is a norbornyl group.

With regard to claim 11, based on the structure of the NBHFATFMA unit in the polymer of formula (III), one of ordinary skill in the art would be motivated to obtain a polymer comprising the unit of formula (11), wherein  $R_5$  is a trifluoromethyl group,  $R_2$ ,  $R_3$ ,

Art Unit: 1795

$R_4$ ,  $R_6$  and  $R_7$  are hydrogen atoms,  $R_8$  is a carbonyl group,  $a=0$ ,  $b=1$ ,  $c=1$  and  $R_{10}$  and  $R_{11}$  are bonded together to form a ring.

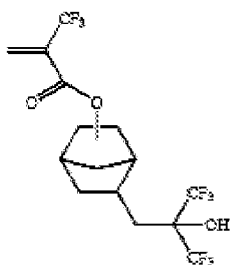
With regard to claim 12, based on the structure of the NBHFATFMA unit in the polymer of formula (III), one of ordinary skill in the art would be motivated to obtain a polymer comprising the unit of formula (12), wherein  $R_5$  is a trifluoromethyl group,  $R_2$ ,  $R_3$ ,  $R_4$ ,  $R_6$  and  $R_7$  are hydrogen atoms and  $R_8$  is a carbonyl group.

With regard to claim 18, the polymer of formula (III) above comprises a unit with a tertbutyl acid-labile group.

With regard to claim 20, Ito et al. disclose that the fluoropolymers are used as resists for use in 157 nm lithography (abstract, page 523).

6. Claims 3, 6, 9-12, 18 and 20-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Komoriya et al. (US Pg-Pub 2003/0232940).

With regard to claim 3, Komoriya et al. disclose the monomer of formula (IV):



(IV) (TFMA-BTHB-NB in par.0165).

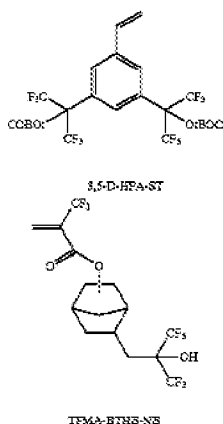
While Komoriya et al. do not specifically disclose the monomer of formula (3) of the instant application, the structure of monomer (IV) would motivate one of ordinary skill in the art to obtain the monomer of formula (3), wherein  $R_5$  is a trifluoromethyl

group, R<sub>2</sub>, R<sub>3</sub>, R<sub>4</sub>, R<sub>6</sub> and R<sub>7</sub> are hydrogen atoms, R<sub>8</sub> is a carbonyl group and R<sub>1b</sub> is a norbornyl group.

With regard to claim 6, based on the structure of the monomer (IV) of Komoriya et al., one of ordinary skill in the art would be motivated to obtain the compound of formula (6), wherein R<sub>5</sub> is a trifluoromethyl group, R<sub>2</sub>, R<sub>3</sub>, R<sub>4</sub>, R<sub>6</sub> and R<sub>7</sub> are hydrogen atoms, R<sub>8</sub> is a carbonyl group, a=0, b=1, c=1 and R<sub>10</sub> and R<sub>11</sub> are bonded together to form a ring.

With regard to claim 9, based on the structure of the monomer (IV) of Komoriya et al., one of ordinary skill in the art would be motivated to obtain the compound of formula (9), wherein R<sub>5</sub> is a trifluoromethyl group, R<sub>2</sub>, R<sub>3</sub>, R<sub>4</sub>, R<sub>6</sub> and R<sub>7</sub> are hydrogen atoms and R<sub>8</sub> is a carbonyl group

With regard to claim 10, Komoriya et al. disclose the polymer of formula (V):



(V)(par.0165), having a molecular weight of 11,200 (see table in par.0147).

While Komoriya et al. do not explicitly show a polymer comprising an unit of formula (10) of the instant application, it would have been obvious to one of ordinary

Art Unit: 1795

skill in the art at the time of the invention to obtain such polymer, based on the structure of the TFMA-BTHB-NB unit of the polymer (V) of Komoriya et al.. The structure of this unit would motivate one of ordinary skill in the art to obtain the unit of formula (10) of the instant application, wherein  $R_5$  is a trifluoromethyl group,  $R_2$ ,  $R_3$ ,  $R_4$ ,  $R_6$  and  $R_7$  are hydrogen atoms,  $R_8$  is a carbonyl group and  $R_{1b}$  is a norbornyl group.

With regard to claim 11, based on the structure of the TFMA-BTHB-NB unit in the polymer of formula (V), one of ordinary skill in the art would be motivated to obtain a polymer comprising the unit of formula (11), wherein  $R_5$  is a trifluoromethyl group,  $R_2$ ,  $R_3$ ,  $R_4$ ,  $R_6$  and  $R_7$  are hydrogen atoms,  $R_8$  is a carbonyl group,  $a=0$ ,  $b=1$ ,  $c=1$  and  $R_{10}$  and  $R_{11}$  are bonded together to form a ring.

With regard to claim 12, based on the structure of the TFMA-BTHB-NB unit in the polymer of formula (V), one of ordinary skill in the art would be motivated to obtain a polymer comprising the unit of formula (12), wherein  $R_5$  is a trifluoromethyl group,  $R_2$ ,  $R_3$ ,  $R_4$ ,  $R_6$  and  $R_7$  are hydrogen atoms and  $R_8$  is a carbonyl group.

With regard to claim 18, the polymer of formula (V) above comprises phenolic hydroxyl units protected with tertbutoxycarbonyl groups, equivalent to the acid-labile groups of the instant application.

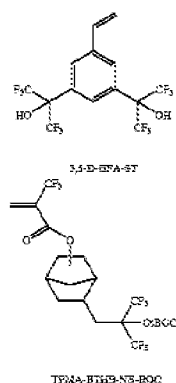
With regard to claims 20-21, Komoriya et al. disclose that a resist composition comprises a polymer and an acid generator (par.0126).

With regard to claim 22, Komoriya et al. disclose that a solution of the resist composition is applied to a supporting member (e.g. silicon wafer) followed by drying to form a photosensitive layer. The photosensitive layer is then exposed to an excimer

laser light through a desired mask pattern followed by heating. Then, a development treatment is conducted to obtain the desired pattern (par.0128).

With regard to claim 23, Komoriya et al. disclose that the exposure may be performed with a KrF excimer laser (par.0183).

With regard to claim 24, Komoriya et al. disclose the polymer of formula (VI):

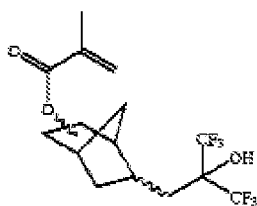


(VI) (par.0163), having a molecular weight of 14,200 (see table in par.0147).

The structure of the TFMA-BTHB-NB-BOC unit of the polymer (VI) of Komoriya et al. would motivate one of ordinary skill in the art to obtain a polymer comprising the unit (10) of the instant application, wherein R<sub>5</sub> is a trifluoromethyl group, R<sub>2</sub>, R<sub>3</sub>, R<sub>4</sub>, R<sub>6</sub> and R<sub>7</sub> are hydrogen atoms, R<sub>8</sub> is a carbonyl group, R<sub>1b</sub> is a norbornyl group and the hydroxyl group is fully protected with tert-butoxycarbonyl protecting groups.

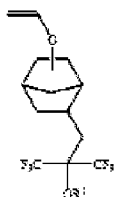
## Conclusion

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure: Allen et al. (US Pg-Pub 2003/0224283) disclose a monomer of formula :



(par.0025), a polymer derived from said monomer and a photoresist composition comprising said polymer.

Kobayashi et al. (US Pg-Pub 2006/0074263) disclose fluorinated polymers comprising the unit of formula:



Any inquiry concerning this communication or earlier communications from the examiner should be directed to ANCA EOFF whose telephone number is (571)272-9810. The examiner can normally be reached on Monday-Friday, 6:30 AM-4:00 PM, EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Cynthia H. Kelly can be reached on 571-272-1526. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only.

Art Unit: 1795

For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/A. E./

Examiner, Art Unit 1795

/Cynthia H Kelly/

Supervisory Patent Examiner, Art Unit 1795